

2855

PATENT  
2927-0113P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Noritoshi NAKAGAWA et al. Conf.: 8419  
Appl. No.: 09/607,324 Group: 2855  
Filed: June 30, 2000 Examiner: ALLEN, Andre

For: VISCOELASTIC CHARACTERISTIC VALUE-  
MEASURING APPARATUS AND METHOD OF  
MEASURING VISCOELASTIC CHARACTERISTIC  
VALUE

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MAY 20 2004

OFFICE OF THE SPECIAL  
PROGRAMS EXAMINER

LETTER TO THE EXAMINER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

December 18, 2003

Sir:

For the Examiner's convenience, attached are copies of all papers in connection with the above-identified application dated July 29, 2003 to present.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert E. Goozner, Ph.D. (Reg. No. 42,593) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

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OFFICE OF PETITIONS


If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By

  
Andrew D. Meikle, #32,868

  
ADM/REG/jls  
2927-0113

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

Attachments: Copy of application papers July 29, 2003 to present

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MS PETITION  
PATENT  
2927-0113P

IN THE U.S. PATENT AND TRADEMARK OFFICE

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Applicant: Noritoshi NAKAGAWA et al. Conf.: 8419  
Appl. No.: 09/607,324 Group: 2855  
Filed: June 30, 2000 Examiner: ALLEN, Andre

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OFFICE OF PETITION

For: VISCOELASTIC CHARACTERISTIC VALUE-MEASURING  
APPARATUS AND METHOD OF MEASURING  
VISCOELASTIC CHARACTERISTIC VALUE

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OFFICE OF THE SPECIAL  
PROGRAMS EXAMINER

MS PETITION  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

PETITION TO WITHDRAW ABANDONMENT  
SINCE REPLY WAS TIMELY FILED

September 30, 2003

Sir:

In response to the Notice of Abandonment mailed August 12, 2003, which issued in connection with the above-identified application, this is a Petition to withdraw the "abandonment status" of the present application, since a Reply was timely filed on July 29, 2003. As evidence of the fact that a Reply was timely filed, enclosed herewith are the following:

- a copy of the Reply filed July 29, 2003; and
- a copy of the postcard receipt which was date-stamped on July 29, 2003.

It is requested that the abandonment status of the present application be immediately removed so that prosecution may resume with full consideration and entry into the record of the timely filed Reply.

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CANCELLED  
DEC 11 2003  
OFFICE OF PETITION

Appl. No. 09/607,324

If the U.S. Patent Examiner has any questions regarding the above matters, please contact Applicants' representative, Andrew D. Meikle, at the phone number listed below.

It is submitted that no fees are required for filing this Petition, since the error occurred because of a mistake on the part of the U.S. Patent and Trademark Office.


If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By 

Andrew D. Meikle, #32,868

  
ADM/REG/jeb  
2927-0113

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000

Attachments: Copy of Reply  
Copy of postcard receipt

(Rev. 04/30/03)

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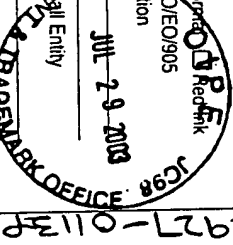
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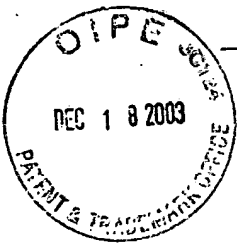
TECHNOLOGY CENTER 2600

Papers Filed herewith on: 7/29/03  
DOCKET NO.: 2927-0113P ATT: ADM/REG  
APPLICANT(S): Noritoshi Nakagawa et al.  
APPL. NO: 09/607,324 FILED: 6/26/00  
PAT NO: \_\_\_\_\_

- ☐ New Application with Transmittal Letter  
☐ Utility ☐ Design ☐ CIP ☐ PCT ☐ Provisional  
☐ Filing Under 37 CFR 1.53(b) ☐ CONT ☐ DIV  
☐ Filing Under 37 CFR 1.53(d) (CPA)  
☐ Filing Under 37 CFR 1.114(RCE)  
☐ Specification Consisting of: \_\_\_\_\_ pages  
☐ Combined Declaration & Power of Attorney  
☐ Assignment / Cover Letter  
☐ Letter to Official Draftsman  
☐ Drawings \_\_\_\_\_ Sheets ☐ Formal ☐ Informal ☐ Redefinition  
☐ Completion of Filing Requirements, PCT/RO/EO/905  
or Formalities Letter and Executed Declaration  
☐ Priority Document(s) / Cover Letter, No. Doc: JUL 29 2003  
☒ Amendment: \_\_\_\_\_  
☐ Transmittal Ltr ☒ Large Entity ☐ Small Entity  
☐ Response \_\_\_\_\_  
☐ Information Disc Stmt, PTO-1449(s) \_\_\_\_\_  
☒ Notice of Appeal ☐ Appeal Brief  
☐ Issue Fee Transmittal ☐ Sequence Listing  
FEES: \$930.00 REF: 9004820  
Letter: \$320.00 REF: 9004834  
☐ Other: \_\_\_\_\_



DOCKET NO. 2927-0113P



Receipt is hereby acknowledged of the papers filed as indicated in connection with the above identified case.  
COMMISSIONER OF PATENTS AND TRADEMARKS  
Due Date: 7/29/03  
Handcarry: \_\_\_\_\_



COPY

MS AF  
RESPONSE UNDER  
37 C.F.R. § 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 2855

PATENT  
2927-0113P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Noritoshi NAKAGAWA et al. Conf.: 8419  
Appl. No.: 09/607,324 Group: 2855  
Filed: June 30, 2000 Examiner: ALLEN, Andre  
For: VISCOELASTIC CHARACTERISTIC VALUE-  
MEASURING APPARATUS AND METHOD OF  
MEASURING VISCOELASTIC CHARACTERISTIC  
VALUE

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NOTICE OF APPEAL FROM THE  
PRIMARY EXAMINER TO THE BOARD OF APPEALS

MS AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

July 29, 2003

Sir:

Applicants hereby appeal to the Board of Appeals from the decision dated January 29, 2003 of the Primary Examiner finally rejecting claims 1-24.

☐ This document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

The applicant(s) hereby petition(s) for an extension of three (3) month(s) pursuant to 37 C.F.R. §§ 1.17 and 1.136(a).

The fee has been calculated as shown below:

☒ NO extensions of time have been previously obtained for responding to the Final Rejection. Thus a fee of \$930.00 is required for the full period of the above-requested extension of time.

☐ An extension of \_\_\_\_\_ ( ) month(s) for responding to the Final Rejection was previously requested and paid for on

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OFFICE OF PETITIONS

Appl. No. 09/607,324

\_\_\_\_\_. Thus a fee of \$0.00 is required to obtain an additional \_\_\_\_\_ ( ) month(s) for filing the Notice of Appeal.

☐ Applicant claims small entity status. See 37 C.F.R. § 1.27.

The Government fee for filing a Notice of Appeal to the Board of Appeals is calculated as follows:

☒ Large entity - \$320.00

☐ Small Entity - \$160.00

Therefore, the TOTAL FEE due for the filing of this Notice of Appeal is \$1,250.00.

Payment of the above TOTAL FEE is being made in the following manner:

☒ Check(s) in the amount of \$930.00 and \$320.00 is/are enclosed.

☐ Please charge Deposit Account No. 02-2448 in the amount of \$0.00. A triplicate copy of this sheet is attached.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By

*R. C. Stewart* (Reg. No. 27,066)  
for Andrew D. Meikle, #32,868

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Falls Church, VA 22040-0747  
(703) 205-8000

APR  
ADM/KJR/crt  
2927-0113P

(Rev. 04/30/03)

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OFFICE OF PETITIONS

	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA	RATE	ADDITIONAL FEE
TOTAL	23	-	24	=	0	\$ 18	\$0.00
INDEPENDENT	3	-	3	=	0	\$ 84	\$0.00
<input type="checkbox"/> FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM						\$280	\$0.00
						TOTAL	\$0.00



- ☒ Petition for three (3) month(s) extension of time pursuant to 37 C.F.R. §§ 1.17 and 1.136(a). \$930.00 for the extension of time.
- ☐ No fee is required.
- ☒ Check(s) in the amount of \$930.00 is(are) enclosed.
- ☐ Please charge Deposit Account No. 02-2448 in the amount of \$0.00. This form is submitted in triplicate.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By

*R.C. Stewart* (Reg. No. 24,046)  
for Andrew D. Meikle, #32,868

P.O. Box 747  
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*ju*  
ADM/KJR/crt  
2927-0113P

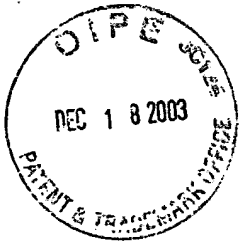
Attachment(s)

(Rev. 04/30/03)

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**OFFICE OF PETITIONS**



MS AF  
REPLY UNDER  
37 C.F.R. § 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 2855

PATENT  
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For: VISCOELASTIC CHARACTERISTIC VALUE-  
MEASURING APPARATUS AND METHOD OF  
MEASURING VISCOELASTIC CHARACTERISTIC  
VALUE

REPLY AFTER FINAL UNDER 37 C.F.R. § 1.116

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DEC 29 2003  
TECHNOLOGY CENTER 2800

MS AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

July 29, 2003

Sir:

In reply to the Office Action dated January 29, 2003, the due date for response having been extended three months to July 29, 2003, the following amendments and remarks are respectfully submitted in connection with the above-identified application.

This reply includes claim amendments and remarks.

The amendments presented herein comply with the "Revised Amendment Format" as set forth in the Official Gazette Notice dated February 25, 2003. In accordance with the Notice, the provisions of 37 C.F.R. § 1.121(a)-(d) are waived.

AMENDMENTS TO THE CLAIMS

1. (Presently Amended) A viscoelastic characteristic value-measuring apparatus comprising:

an input bar and an output bar arranged in a straight line to hold a specimen made of a viscoelastic material therebetween, wherein said length of said input bar is set to not less than 1500mm and not more than 2500mm, and said length of said output bar is set to not less than 500mm and not more than 2500mm;

first and second strain gauges installed on said input bar to measure an incident strain wave generated when a front end of said input bar is hit and a reflected strain wave; and

third and fourth strain gauges installed on said output bar to measure a transmitted strain wave transmitted from said input bar to said output bar through said specimen,

wherein said input bar and said output bar are made of a viscoelastic material; and

a length of said input bar is set so that the reflected strain wave is damped and a re-reflected strain wave is not generated.

2. (Previously Amended) The measuring apparatus according to claim 1, wherein the length of said output bar is relatively less than the length of said output bar.

3. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are made of a polymer.

4. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are made of a viscoelastic material whose viscoelastic characteristic value is different from that of the specimen in a small degree.

5. (Previously Amended) The measuring apparatus according to claim 1, wherein said first strain gauge is installed on said input bar at a front side thereof, and said second strain gauge is installed thereon at a rear side thereof, such that said first strain gauge is located between a position spaced at an interval of 10% of a whole length of said input bar from a rear end thereof and a position spaced at an interval of 70% of the whole length thereof from the rear end thereof and said second strain gauge is located between a position spaced at an interval of 8% of the whole length of said input bar from the rear end thereof and a position spaced at an interval of 62% of the whole length thereof from the rear end thereof.

6. (Previously Amended) The measuring apparatus according to claim 1, wherein said third strain gauge is installed on said

output bar at a front side thereof, and said fourth strain gauge is installed thereon at a rear side thereof, such that said third strain gauge is located between a position spaced at an interval of 4% of the whole length of said output bar from a front end thereof and a position spaced at an interval of 25% of the whole length thereof from the front end thereof and said fourth strain gauge is located between a position spaced at an interval of 8% of the whole length of said output bar from the front end thereof and a position spaced at an interval of 50% of the whole length thereof from the front end thereof.

7. (Original) The measuring apparatus according to claim 1, wherein an interval between said first strain gauge and said second strain gauge is set to a range from 200mm to 1200mm both inclusive; and an interval between said third strain gauge and said fourth strain gauge is set to a range from 30mm to 400mm both inclusive.

8. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are circular and have the same sectional area; and a diameter thereof is set to a range from 10mm to 30mm both inclusive so that the sectional area thereof is larger than that of said specimen by not less than 1.0 time and not more than three times.

9. (Presently Amended) A method of measuring a viscoelastic characteristic value, comprising the steps of:

providing a measuring apparatus having an input bar and output bar;

setting a length of said input bar such that a reflected strain wave generated in the input bar when the input bar is hit is damped and a re-reflected strain wave is not generated, wherein said length of said input bar is set to not less than 1500mm and not more than 2500mm, and said length of said output bar is set to not less than 500mm and not more than 2500mm;

making a base line value of a history of a strain wave zero by performing a zero correction at the rear end of said input bar and at the front end of said output bar;

hitting a front end of said input bar, with a specimen held between a rear end of said input bar and a front end of an output bar to generate a strain wave including an incident strain wave, the reflected strain wave, and a transmitted strain wave propagating in said input bar, said specimen, and said output bar;

measuring said incident strain wave and said reflected strain wave with first and second strain gauges installed on said input bar, and measuring a transmitted strain wave with third and fourth strain gauges installed on said output bar;

~~estimating a history of said incident strain wave at the rear end of said input bar, a history of said reflected strain wave at the rear end of said input bar, and a history of said transmitted strain wave at the front end of said output bar by using a history of said each strain wave;~~

computing a strain speed history of a specimen, a strain history thereof, and a stress history thereof from said estimated history of said incident strain wave, said history of said reflected strain wave, and said history of said transmitted strain wave and determining a stress-strain curve of said specimen; and

computing a viscoelastic characteristic value including Young's modulus or a loss factor, from said stress-strain curve.

10. (Original) The method according to claim 9, wherein the strain speed history of said specimen, the strain history thereof, and the stress history thereof are computed by using a viscoelastic constant of each of said input bar and said output bar to determine the stress-strain curve of said specimen.

11. (Original) The method according to claim 9, wherein a low-pass filter is used to perform a correction of removing a high-frequency wave having a frequency more than 10kHz from a strain wave measured with said first, second, third, and fourth strain gauges.

12. (Currently Canceled)

13. (Original) The method according to claim 9, wherein a relaxation time  $\lambda$  is derived by using a tangent at a predetermined point of an initial stage of a computed strain history of a specimen after a peak to correct said strain history after said predetermined point;

$$\epsilon(t) = \epsilon_0 \cdot e^{-t/\lambda} \quad \text{--- (1) and}$$

where  $\epsilon_0$  is a strain at the point of contact;

a relaxation time  $\lambda$  is derived by using a tangent at a predetermined point of an initial stage of a computed stress history of said specimen after a peak to correct said stress history after said predetermined point;

$$\sigma(t) = \sigma_0 \cdot e^{-t/\lambda} \quad \text{--- (2)}$$

where  $\sigma_0$  is a stress at the point of contact.

14. (Original) The method according to claim 9, wherein a length of a specimen is set to a range from 1mm to 15mm both inclusive.

15. (Previously Amended) The method according to claim 9, wherein a front end of said input bar is hit with an impact bar at an impact speed of 1m/s - 70m/s.



16. (Previously Added) The measuring apparatus according to claim 1, further comprising:

an impact bar for hitting the front end of the input bar.

17. (Previously Added) The measuring apparatus according to claim 16, wherein the specimen includes a viscoelastic material having a viscoelastic characteristic that a maximum strain speed generated at the specimen is 500-8000 per second, when the front end of the input bar is hit with the impact bar at an impact speed of 1m/s - 70m/s.

18. (Previously Added) The measuring apparatus of claim 1, wherein the apparatus measures the strain generated at the specimen when it deforms in a relatively large amount and at a relatively high speed.

19. (Previously Added) The method according to claim 9, wherein the maximum strain speed generated at the specimen is 500-8000 per second, when the front end of the input bar is hit with a impact bar.

20. (Previously Added) The method of claim 9, wherein the viscoelastic characteristic value for the specimen is computed when

the specimen deforms in a relatively large amount at a relative high speed.

21. (Previously Added) The measuring apparatus according to claim 1, wherein the specimen has a characteristic maximum strain deformation amount in the range from 1% to 30%.

22. (Previously Added) The method according to claim 9, wherein the specimen has a characteristic maximum strain deformation amount in the range from 1% to 30%.

23. (Previously Added) The measuring apparatus according to claim 1, wherein said length of said output bar is set to not less than 500mm nor more than 2500mm, and said length of said input bar is set to not less than 1500mm nor more than 2500mm.

24. (Previously Added) The method according to claim 9, wherein said length of said output bar is set to not less than 500mm nor more than 2500mm, and said length of said input bar is set to not less than 1500mm nor more than 2500mm.

REMARKSStatus of the Claims

Claims 1-11 and 13-24 are pending in this application. Claim 12 has been canceled. Newly amended claim 1 is amended to further define the length of the input and output bars. Amended claim 9 is based on the incorporation of allowable claim 12. No new matter has been added by the above claim amendments.

Rejection under 35 USC 103(a)

The Examiner rejects claims 1-11 and 14-24 as obvious over Document 1 (*Impact Engineering*, Nikkan Kogyo Newspaper Ltd., October 28, 1988, pp.173-183) in view of Document 2 (Nakagawa et al., *Lecture Thesis of 16<sup>th</sup> Series of Chugoku Branch of Japan Design Engineering Society Association*, June 20, 1988, pp. 25-29). Applicants overcome the rejection by amending claim 1 to further define the length of the input and output bars so that the input bar is set to not less than 1500mm and not more than 2500mm, and the output bar is set to not less than 500mm and not more than 2500mm. Applicants submit that this limitation is neither disclosed nor suggested by the cited art. Thus, newly amended claim 1 and all claims that depend either directly or indirectly therefrom are allowable. As such, the rejection should be withdrawn.

Applicants also amend independent claim 9 to incorporate the subject matter of claim 12, which is indicated as being allowable. Thus, the rejection over claim 9 and the claims that depend either directly or indirectly therefrom are also allowable. As such, the rejection should be withdrawn.

### Conclusion

As Applicants have addressed and overcome all rejections in the Office Action, Applicants respectfully request that the rejections be withdrawn and that the claims be allowed.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a three (3) month extension of time for filing a reply in connection with the present application, and the required fee of \$930.00 is attached hereto.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Kecia Reynolds (Reg. No. 47,021) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By *Kate Byrle* # 47,021  
for Andrew D. Meikle, #32,868

*n*  
ADM/KJR/crt  
2927-0113P

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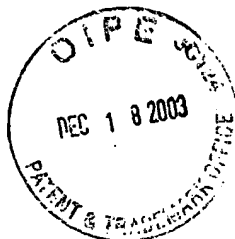


UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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P.O. Box 1450  
Alexandria, Virginia 22313-1450  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/607,324	06/30/2000	Noritoshi Nakagawa	2927-113P	8419

7590 08/12/2003  
Birch Stewart Kolasch & Birch LLP  
P O Box 747  
Falls Church, VA 22040-0747



EXAMINER

ALLEN, ANDRE J

ART UNIT PAPER NUMBER

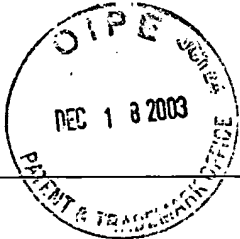
2855

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

DOCKETED  
Petition to  
Withdraw Aband  
10-12-03

DOCKETED  
Petition to  
Revoke  
4-29-04



# Notice of Abandonment

Application No.

09/607,324

Examiner

Andre J. Allen

Applicant(s)

NAKAGAWA ET AL.

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 29 June 2003.
  - (a) ☐ A reply was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply (including a total extension of time of \_\_\_\_\_ month(s)) which expired on \_\_\_\_\_.
  - (b) ☐ A proposed reply was received on \_\_\_\_\_, but it does not constitute a proper reply under 37 CFR 1.113 (a) to the final rejection.  
(A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114).
  - (c) ☐ A reply was received on \_\_\_\_\_ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
  - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
  - (a) ☐ The issue fee and publication fee, if applicable, was received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
  - (b) ☐ The submitted fee of \$\_\_\_\_\_ is insufficient. A balance of \$\_\_\_\_\_ is due.  
The issue fee required by 37 CFR 1.18 is \$\_\_\_\_\_. The publication fee, if required by 37 CFR 1.18(d), is \$\_\_\_\_\_.
  - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
  - (a) ☐ Proposed corrected drawings were received on \_\_\_\_\_ (with a Certificate of Mailing or Transmission dated \_\_\_\_\_), which is after the expiration of the period for reply.
  - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record, the assignee of the entire interest, or all of the applicants.
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34(a)) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on \_\_\_\_\_ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☒ The reason(s) below:

Attorney Andrew Meikle was notified on 8-6-03 of the abandoned status of this file.

EDWARD LEFKOWITZ  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

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DEC 31 2003

OFFICE OF PETITIONS

Petitions to revive under 37 CFR 1.137(a) or (b), or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.



MS AF  
RESPONSE UNDER  
37 C.F.R. § 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 2855

PATENT  
2927-0113P

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Noritoshi NAKAGAWA et al. Conf.: 8419  
Appl. No.: 09/607,324 Group: 2855  
Filed: June 30, 2000 Examiner: ALLEN, Andre  
For: VISCOELASTIC CHARACTERISTIC VALUE-  
MEASURING APPARATUS AND METHOD OF  
MEASURING VISCOELASTIC CHARACTERISTIC  
VALUE

NOTICE OF APPEAL FROM THE  
PRIMARY EXAMINER TO THE BOARD OF APPEALS

MS AF  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

July 29, 2003

Sir:

Applicants hereby appeal to the Board of Appeals from the decision dated January 29, 2003 of the Primary Examiner finally rejecting claims 1-24.

☐ This document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

The applicant(s) hereby petition(s) for an extension of three (3) month(s) pursuant to 37 C.F.R. §§ 1.17 and 1.136(a).

The fee has been calculated as shown below:

☒ NO extensions of time have been previously obtained for responding to the Final Rejection. Thus a fee of \$930.00 is required for the full period of the above-requested extension of time.

☐ An extension of \_\_\_\_\_ ( ) month(s) for responding to the Final Rejection was previously requested and paid for on



Appl. No. 09/607,324

\_\_\_\_\_. Thus a fee of \$0.00 is required to obtain an additional \_\_\_\_\_ ( ) month(s) for filing the Notice of Appeal.

☐ Applicant claims small entity status. See 37 C.F.R. § 1.27.

The Government fee for filing a Notice of Appeal to the Board of Appeals is calculated as follows:

☒ Large entity - \$320.00

☐ Small Entity - \$160.00

Therefore, the TOTAL FEE due for the filing of this Notice of Appeal is \$1,250.00.

Payment of the above TOTAL FEE is being made in the following manner:

☒ Check(s) in the amount of \$930.00 and \$320.00 is/are enclosed.

☐ Please charge Deposit Account No. 02-2448 in the amount of \$0.00. A triplicate copy of this sheet is attached.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By R. C. Stewart (Reg. No. 27,066)  
for Andrew D. Meikle, #32,868

ADM/KJR/crt  
2927-0113P

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(Rev. 04/30/03)

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	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA	RATE	ADDITIONAL FEE
TOTAL	23	-	24	=	0	\$ 18	\$0.00
INDEPENDENT	3	-	3	=	0	\$ 84	\$0.00
<input type="checkbox"/> FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM						\$280	\$0.00
						TOTAL	\$0.00

- ☒ Petition for three (3) month(s) extension of time pursuant to 37 C.F.R. §§ 1.17 and 1.136(a). \$930.00 for the extension of time.
- ☐ No fee is required.
- ☒ Check(s) in the amount of \$930.00 is(are) enclosed.
- ☐ Please charge Deposit Account No. 02-2448 in the amount of \$0.00. This form is submitted in triplicate.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By

*for* R. C. Stewart (Reg. No. 24,026)  
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2927-0113P

Attachment(s)

(Rev. 04/30/03)



MS AF  
REPLY UNDER  
37 C.F.R. § 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 2855

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**OFFICE OF PETITIONS**

REPLY AFTER FINAL UNDER 37 C.F.R. § 1.116

MS AF

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

July 29, 2003

Sir:

In reply to the Office Action dated January 29, 2003, the due date for response having been extended three months to July 29, 2003, the following amendments and remarks are respectfully submitted in connection with the above-identified application.

This reply includes claim amendments and remarks.

The amendments presented herein comply with the "Revised Amendment Format" as set forth in the Official Gazette Notice dated February 25, 2003. In accordance with the Notice, the provisions of 37 C.F.R. § 1.121(a)-(d) are waived.

AMENDMENTS TO THE CLAIMS

1. (Presently Amended) A viscoelastic characteristic value-measuring apparatus comprising:

an input bar and an output bar arranged in a straight line to hold a specimen made of a viscoelastic material therebetween, wherein said length of said input bar is set to not less than 1500mm and not more than 2500mm, and said length of said output bar is set to not less than 500mm and not more than 2500mm;

first and second strain gauges installed on said input bar to measure an incident strain wave generated when a front end of said input bar is hit and a reflected strain wave; and

third and fourth strain gauges installed on said output bar to measure a transmitted strain wave transmitted from said input bar to said output bar through said specimen,

wherein said input bar and said output bar are made of a viscoelastic material; and

a length of said input bar is set so that the reflected strain wave is damped and a re-reflected strain wave is not generated.

2. (Previously Amended) The measuring apparatus according to claim 1, wherein the length of said output bar is relatively less than the length of said input bar.

3. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are made of a polymer.

4. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are made of a viscoelastic material whose viscoelastic characteristic value is different from that of the specimen in a small degree.

5. (Previously Amended) The measuring apparatus according to claim 1, wherein said first strain gauge is installed on said input bar at a front side thereof, and said second strain gauge is installed thereon at a rear side thereof, such that said first strain gauge is located between a position spaced at an interval of 10% of a whole length of said input bar from a rear end thereof and a position spaced at an interval of 70% of the whole length thereof from the rear end thereof and said second strain gauge is located between a position spaced at an interval of 8% of the whole length of said input bar from the rear end thereof and a position spaced at an interval of 62% of the whole length thereof from the rear end thereof.

6. (Previously Amended) The measuring apparatus according to claim 1, wherein said third strain gauge is installed on said

output bar at a front side thereof, and said fourth strain gauge is installed thereon at a rear side thereof, such that said third strain gauge is located between a position spaced at an interval of 4% of the whole length of said output bar from a front end thereof and a position spaced at an interval of 25% of the whole length thereof from the front end thereof and said fourth strain gauge is located between a position spaced at an interval of 8% of the whole length of said output bar from the front end thereof and a position spaced at an interval of 50% of the whole length thereof from the front end thereof.

7. (Original) The measuring apparatus according to claim 1, wherein an interval between said first strain gauge and said second strain gauge is set to a range from 200mm to 1200mm both inclusive; and an interval between said third strain gauge and said fourth strain gauge is set to a range from 30mm to 400mm both inclusive.

8. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are circular and have the same sectional area; and a diameter thereof is set to a range from 10mm to 30mm both inclusive so that the sectional area thereof is larger than that of said specimen by not less than 1.0 time and not more than three times.

9. (Presently Amended) A method of measuring a viscoelastic characteristic value, comprising the steps of:

providing a measuring apparatus having an input bar and output bar;

setting a length of said input bar such that a reflected strain wave generated in the input bar when the input bar is hit is damped and a re-reflected strain wave is not generated, wherein said length of said input bar is set to not less than 1500mm and not more than 2500mm, and said length of said output bar is set to not less than 500mm and not more than 2500mm;

making a base line value of a history of a strain wave zero by performing a zero correction at the rear end of said input bar and at the front end of said output bar;

hitting a front end of said input bar, with a specimen held between a rear end of said input bar and a front end of an output bar to generate a strain wave including an incident strain wave, the reflected strain wave, and a transmitted strain wave propagating in said input bar, said specimen, and said output bar;

measuring said incident strain wave and said reflected strain wave with first and second strain gauges installed on said input bar, and measuring a transmitted strain wave with third and fourth strain gauges installed on said output bar;



~~estimating a history of said incident strain wave at the rear end of said input bar, a history of said reflected strain wave at the rear end of said input bar, and a history of said transmitted strain wave at the front end of said output bar by using a history of said each strain wave;~~

computing a strain speed history of a specimen, a strain history thereof, and a stress history thereof from said estimated history of said incident strain wave, said history of said reflected strain wave, and said history of said transmitted strain wave and determining a stress-strain curve of said specimen; and

computing a viscoelastic characteristic value including Young's modulus or a loss factor, from said stress-strain curve.

10. (Original) The method according to claim 9, wherein the strain speed history of said specimen, the strain history thereof, and the stress history thereof are computed by using a viscoelastic constant of each of said input bar and said output bar to determine the stress-strain curve of said specimen.

11. (Original) The method according to claim 9, wherein a low-pass filter is used to perform a correction of removing a high-frequency wave having a frequency more than 10kHz from a strain wave measured with said first, second, third, and fourth strain gauges.

12. (Currently Canceled)

13. (Original) The method according to claim 9, wherein a relaxation time  $\lambda$  is derived by using a tangent at a predetermined point of an initial stage of a computed strain history of a specimen after a peak to correct said strain history after said predetermined point;

$$\epsilon(t) = \epsilon_0 \cdot e^{-t/\lambda} \text{ --- (1) and}$$

where  $\epsilon_0$  is a strain at the point of contact;

a relaxation time  $\lambda$  is derived by using a tangent at a predetermined point of an initial stage of a computed stress history of said specimen after a peak to correct said stress history after said predetermined point;

$$\sigma(t) = \sigma_0 \cdot e^{-t/\lambda} \text{ --- (2)}$$

where  $\sigma_0$  is a stress at the point of contact.

14. (Original) The method according to claim 9, wherein a length of a specimen is set to a range from 1mm to 15mm both inclusive.

15. (Previously Amended) The method according to claim 9, wherein a front end of said input bar is hit with an impact bar at an impact speed of 1m/s - 70m/s.

16. (Previously Added) The measuring apparatus according to claim 1, further comprising:

an impact bar for hitting the front end of the input bar.

17. (Previously Added) The measuring apparatus according to claim 16, wherein the specimen includes a viscoelastic material having a viscoelastic characteristic that a maximum strain speed generated at the specimen is 500-8000 per second, when the front end of the input bar is hit with the impact bar at an impact speed of 1m/s - 70m/s.

18. (Previously Added) The measuring apparatus of claim 1, wherein the apparatus measures the strain generated at the specimen when it deforms in a relatively large amount and at a relatively high speed.

19. (Previously Added) The method according to claim 9, wherein the maximum strain speed generated at the specimen is 500-8000 per second, when the front end of the input bar is hit with a impact bar.

20. (Previously Added) The method of claim 9, wherein the viscoelastic characteristic value for the specimen is computed when

the specimen deforms in a relatively large amount at a relative high speed.

21. (Previously Added) The measuring apparatus according to claim 1, wherein the specimen has a characteristic maximum strain deformation amount in the range from 1% to 30%.

22. (Previously Added) The method according to claim 9, wherein the specimen has a characteristic maximum strain deformation amount in the range from 1% to 30%.

23. (Previously Added) The measuring apparatus according to claim 1, wherein said length of said output bar is set to not less than 500mm nor more than 2500mm, and said length of said input bar is set to not less than 1500mm nor more than 2500mm.

24. (Previously Added) The method according to claim 9, wherein said length of said output bar is set to not less than 500mm nor more than 2500mm, and said length of said input bar is set to not less than 1500mm nor more than 2500mm.

REMARKSStatus of the Claims

Claims 1-11 and 13-24 are pending in this application. Claim 12 has been canceled. Newly amended claim 1 is amended to further define the length of the input and output bars. Amended claim 9 is based on the incorporation of allowable claim 12. No new matter has been added by the above claim amendments.

Rejection under 35 USC 103(a)

The Examiner rejects claims 1-11 and 14-24 as obvious over Document 1 (*Impact Engineering*, Nikkan Kogyo Newspaper Ltd., October 28, 1988, pp.173-183) in view of Document 2 (Nakagawa et al., *Lecture Thesis of 16<sup>th</sup> Series of Chugoku Branch of Japan Design Engineering Society Association*, June 20, 1988, pp. 25-29). Applicants overcome the rejection by amending claim 1 to further define the length of the input and output bars so that the input bar is set to not less than 1500mm and not more than 2500mm, and the output bar is set to not less than 500mm and not more than 2500mm. Applicants submit that this limitation is neither disclosed nor suggested by the cited art. Thus, newly amended claim 1 and all claims that depend either directly or indirectly therefrom are allowable. As such, the rejection should be withdrawn.

Applicants also amend independent claim 9 to incorporate the subject matter of claim 12, which is indicated as being allowable. Thus, the rejection over claim 9 and the claims that depend either directly or indirectly therefrom are also allowable. As such, the rejection should be withdrawn.

### Conclusion

As Applicants have addressed and overcome all rejections in the Office Action, Applicants respectfully request that the rejections be withdrawn and that the claims be allowed.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a three (3) month extension of time for filing a reply in connection with the present application, and the required fee of \$930.00 is attached hereto.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Kecia Reynolds (Reg. No. 47,021) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By Kate Byrd #47,021  
for Andrew D. Meikle, #32,868

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